

19940418II-EDIR

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.1 OAOWF1 FILE

FLT ID: 940413H

FM: MCF

TO: MCF

FLT NO: 27-94

BLK IN: 1935

ATA: 1928

ETD: 1430Z

BLK OUT: 1418

RTD: 1430

ETE: 6

BLK TIME: 5:17 (S.3)

FLT TIME: 4:58 (S.0)

SPONSOR ORG: NHC

PROGRAM: RECCO

PURPOSE: AF DECOMPARISON

OAO PERSONNEL

AC Ticknor ✓

SYS ENG Roles ✓

CP Player ✓

DATA SYS Barr ✓

NAV Strong ✓

~~RECCO~~ M. Manera ✓

FE Moore / Torrey

BT/ODW

RADIO Sens. Source

CLD PHYS

FD Peffish ✓

DOPPLER

PARTICIPATING SCIENTIST/VISITORS/OAO TEAL 25

LAST, FIRST NAME

ACTIVITY ON A/C

AFFILIATION

552			
170			
2/14			
11			
19.5			
1.4/			
21.5			
019.3			
1018.5			
0/12			
1023.3			
15K			
47			

PROPOSED/ACTUAL MISSION/REMARKS (RECCO, FIXES, STORM, PENET, NHOP #)

Joined up w/ TEAL 25 in SE corner of W-92
(couldn't work E-buff MORA - too much wx).

Flew 4 legs at 500 mb NNDW-SSE, 4 legs at 400 mb D-S.

4 legs 700 mb D/S, 2 legs 840 mb above cloud deck.

General wx - High thin ovc > 30K, strat deck at 4K, sc 2

2K. Sur wind discontinuity at N end of leg, sur wind NE 215K

Not disc. 50 line (stationary) ~ 50 mi N of N land pt.

940413N AF Intercomparison

Time	Lat	Lon	TH	WD	WS	PA	GA	TA	TD	SP	PS			
1418	2750.9	8228.6				-51		26.9	21.3		1019.2	3LK		
144230	2741.5	8308.2	259	274	16	4603	4909	-2.7	-17.0	1020.3	561.9	↑		
1448	2732.7	8332.9	258	286	28	5492	5824	-9.3	-22.6	1022.5	505.5	-		
50215	2730.7	8445.2	264	289	36	5506	5839	-9.2	-19.9	1021.6	504.6			
51730	2726.0	8401.1	266	280	33	5492	5821	-8.7	-18.5	1020.6	505.7			
52915	2721.4	8700.9	265	271	31	5488	5821	-8.6	-18.3	1020.5	505.9			
55930	2705.4	8931.7	259	260	29	5481	5806	-8.8	-19.1	1020.5	506.2			
160830	2700	9016.6	AF	IP	SC	low	-CF	50	OMI	N	on	LI	-rec	LF & TA -
PRDTR @ 5 SEC														CF 1015
162008	2720	9019	356	252	29	5591	5920	-9.9	-19.8	1021.5	499.7	162308	LEG 1	
162630	2730.5	9023.7	167	255	29	5599	5923	-9.9	-19.8	1021.0	498.8	163030	LEG 2	24
STRUCKS OF CL			2			5-10K	N							LEG 3
163500	2724.9	905.0	337	248	29	5594	5923	-9.8	-19.8	1020.5	499.1	163800	LEG 3	
164100	2731.3	9024.3	165	250	31	5581	5911	-9.7	-20.3	1020.4	499.5	164400	LEG 4	22
1644	11.0	70	24K											
165530	2729	9015	338	258	51	7193	7584	-21.3	-26.5	1023.0	399.7	165830	LEG 1	200 24
170100	2736.1	9024.0	169	262	49	7186	7581	-21.5	-26.0	1023.2	399.7	170400	LEG 2	1116
170730	2725.3	9013.5	346	259	53	7172	7581	-21.4	-26.0	1023.4	399.2	171030	LEG 3	180 24
171315	2734.1	9022.1	175	265	51	7186	7582	-21.7	-25.6	1023.9	400.5	171615	LEG 4	
171330	V	70	10K	alme	stat	doct								
172530	2704	9014	269	15	332	3026	3215	7.0	4.6	1018.6	697.7	172830	LEG 1	200 77
173115	2711.4	9024.9	182	287	13	3043	3235	6.7	-4.1	1018.8	696.9	173415	LEG 2	
173800	2708.7	9019.8	355	290	12	3060	3251	6.8	-4.5	1018.1	695.6	1741	LEG 3	2405
174420	2784.9	9022.6	181	293	12	3067	3256	7.4	-8.2	1017.8	694.2	174720	LEG 4	
175700	2735	9017	0	174	16	1538	1659	14.9	8.8	1020.0	841.1	1800	LEG 1	515
180345	2748	9011	183	187	19	1536	1657	14.6	8.6	1019.9	841.6	180645	LEG 2	
182045	2735.0	8904.6	22	256	34	5346	5656	-7.8	-8.5	1019.0	515.6			
184915	2753.7	8552.0	84	279	42	5349	5658	-7.6	-20.6	1018.8	515.5			
190415	27528	84090	100	271	25	4575	4824	-2.8	-6.0	1018.7	577.6	↓ 70 low		
1935	2751.1	8229.6				-38		28.4	21.7		1017.7			2744.48231.1

1420

1550

1600

A/C COMMANDER	NAVIGATOR	A/C NO.	MISSION NO.	TIME AIRBORNE	LOCATION	DATE	PROJ. NAME
TICKNOR	STRONGB	N42RF	94-027	1429	MCF	13 APR 94	AIRCRAFT CALIB.

TIME OF ENTRY	POSITION	TYPE INE USED	INE #1 POSITION	LAT LON COR'S	INE #2 POSITION	LAT LON COR'S	ALT GS	TH TK	REMARKS
1439	27-44.4 82-52.6	GPS 1	27-44.4 82-52.6	0 0	27-44.3 82-52.6	+1.1 0	7 240	261 258	PDOP 2.3
1526	27-22.7 86-44.4	GPS 1	27-21.8 86-45.1	+1.1 -1.7	27-22.4 86-45.0	+1.3 -1.6	18.0 270	266 265	2.3
1640	27-24.2 90-25.3	GPS 1	27-31.3 90-26.4	+2.9 -1.1	27-33.1 90-25.9	+1.1 -1.6	18.3 286	173 166	2.5
1739	27-12.9 90-20.1	GPS 1	27-10.8 90-19.5	+2.1 +1.6	27-11.7 90-19.8	+1.2 +1.3	10.0 280	356 358	3.8
1812	27-28.5 89-56.6	GPS 1	27-24.4 89-57.9	+4.1 -1.3	27-26.5 89-57.1	+2.0 -1.5	7 285	281 288	2.2
1936	27-50.9 82-29.6	4 1	27-44.3 82-31.1	+6.6 -1.5	27-45.9 82-30.7	+5.0 -1.1	FE 75	265 2	CHUCKS

ATC CLEARANCE:

CAF

7 1.6

FE

180 +10

279.6

30 3612

ENROUTE CLEARANCES:

1410

1545

TYPE OF FIX: (1) DR (2) RADIO (3) CELESTIAL (4) VISUAL (5) LORAN (6) RADAR (7) DOPPLER - INERTIAL
(8) OMEGA (9) INERTIAL (10) OMEGA - INERTIAL

PROPOSED T.O.	14007
ACTUAL T.O.	1429

SYS	BEGIN ALIGN TIME	NCS CONN	Ω AID	TIME OUT OF COARSE	ALIGN STS 0-5	(1) TIME INTO NAV.	(2) TIME OUT NAV.	ΔT (2)(1)	TERMINAL ERRORS		
				ELAPSE ALIGN POST TIME					LAT	LONG	G S
INS 1	1300	/	/	/	5	1413	1936	5+23	+6.6	-1.5	2
INS 2 IMU	✓	/	/	/	5	✓	✓	✓	+5.0	-1.1	1

OTHER REMARKS:



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
Aircraft Operations Center
P. O. Box 6829
MacDill AFB, FL 33608-0829

15 April 1994 AOC:JAP:maw

MEMORANDUM FOR: NOAA AOC/AFR 53 WRS Intercomparison Interests

FROM: Jack Parrish *JAP*
NOAA-42 Flight Director

SUBJECT: 13 April Intercomparison Flight

On 13 April, 1994, NOAA AOC and the AFR 53rd WRS conducted the first intercomparison flight in order to satisfy the OFCM Memorandum 8 from the 48th Interdepartmental Hurricane Conference. Close formation was flown at four levels, including two standard reconnaissance altitudes, in parallel legs generally centered around 25.5N, 90.3W (in Warning Area W-92, about 150 miles SSW of New Orleans). The four levels, in order, were 18,350 feet (500 mb), 23,575 feet (400 mb), 10,000 feet PA (~697 mb), and 5,000 feet (~841 mb). All levels except the lowest were flown crosswind, and the planned 1500-foot segments were omitted due to light winds and numerous clouds below 4,000 feet. Although it was not part of the original plan, the flight crews added the 400 mb level on the day of flight when coastal soundings indicated high winds at that level.

AOC and AFRES crews intended to fly in a warning area just offshore south of Biloxi, MS, but a stationary front with convective squall lines necessitated the move south of the Mississippi Delta. Thus, there will be little ground-based WSR-88D ground truth data for this first formation flight. Also, due to the frontal position, most coastal soundings will reflect the cold side at low levels, while the flight was carried out on the warm side.

Flight observations indicated an extensive homogeneous wind field at and above 10,000 feet, with only isolated convective turrets projecting above 5,000 feet through a stratocumulus deck that topped out around 4,000 feet. NOAA-42's Lower Fuselage (LF) radar confirmed a visual arc cloud just N of the intercomparison pattern's north end, lying E-W and translating slowly S ahead of moderate NE winds near the surface north of the arc cloud. This discontinuity was very shallow and had no effect on the wind field at flight level. Surface winds south of the arc cloud were visually estimated to be light and variable. The nearest precipitation on LF radar was 80 miles north of the intercomparison area.



NOAA-42 flew trail on TEAL-25, slightly to the right and behind the lead aircraft. The one exception was the last leg at 5,000 feet, when the aircraft switched roles with TEAL-25 to the left of and behind NOAA-42. Distance between aircraft during the formation was maintained as briefed between the crews. Altitude differences between the aircraft on the straight legs never exceeded 50 feet, and rarely exceeded 25 feet. Formation distances loosened during altitude changes, but even then did not exceed 3,000 feet horizontally or 1,000 feet vertically. Before each straight leg, sufficient time was allowed for the lead aircraft to stabilize on the flight track, altitude and airspeed, and the trail aircraft its relative position, before a flight leg start time was called. A time hack before the formation start established no greater than 1-second difference between the NOAA and AFRES system clocks.

Real-time data was transmitted via normal means to the National Hurricane Center. NOAA-42 transmitted uncorrected INE positions and horizontal winds characterized by a 1-minute, dual-slope filter (centered on the report time). NOAA-42 recorded 1-hertz INE and GPS positions, and uncorrected INE horizontal ground speeds, along with LF and Tail radar data for possible doppler comparison with in-situ wind fields.

The first intercomparison flight was carried out between 1620Z and 1807Z (these times cover the formation period only). Including ferry time to and from the operation area, NOAA-42 blocked 5.3 hours. Please refer to the following page for a complete data log for NOAA-42, including all start and end times of wind comparison legs.

NOAA-42 Intercalibration Event Log

1418Z Block Out
1430Z Take Off
144730Z At altitude, 505 mb
160820Z At IP (27.0N, 90.25W)

Start, End Time(Z)	Alt(mb)	Trk(deg)	IAS(knots)
162008-162308	500	357	200
162630-162930	500	173	200
163500-163800	500	337	220
164100-164400	500	165	220
165530-165830	400	335	200
170100-170400	400	169	200
170730-171030	400	346	180
171315-171615	400	175	180
172530-172830	697	332	200
173115-173415	697	182	200
173800-174100	696	358	240
174420-174720	695	180	240
175700-180000	841	360	240
180345-180645	841	182	240

180700Z Broke formation, return.
180900Z Climb to cruise altitude.
181820Z Level, 515 mb.
185300Z Descend for landing.
192800Z Landed.
193500Z Blocked in.